Nov. 20, 1923. 1,474,718

G. A. HUMASON

PUMP

Filed Sept. 23, 1921

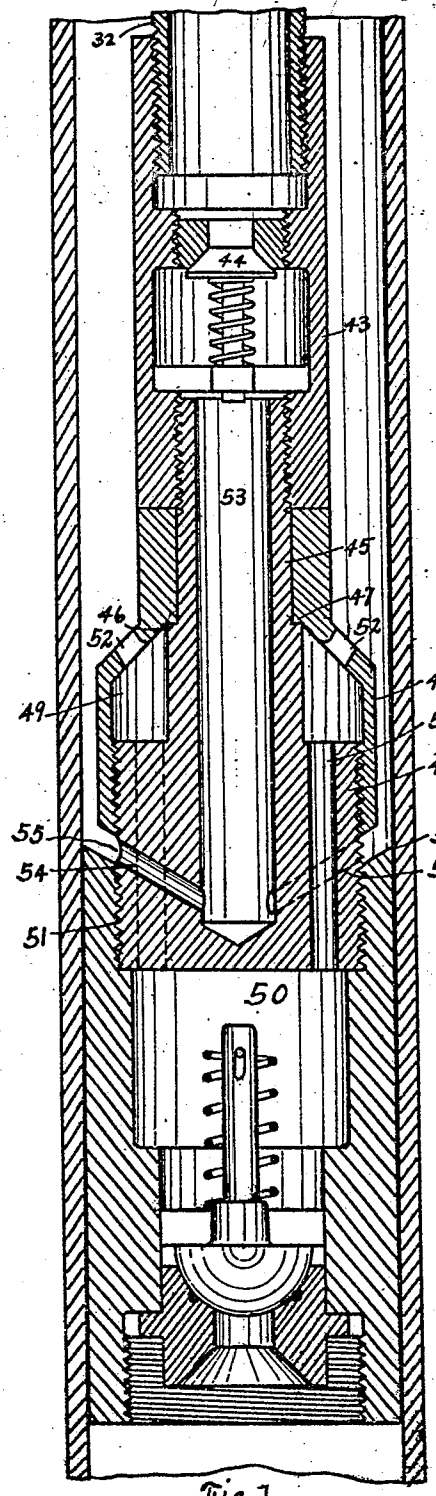


Fig. 1.

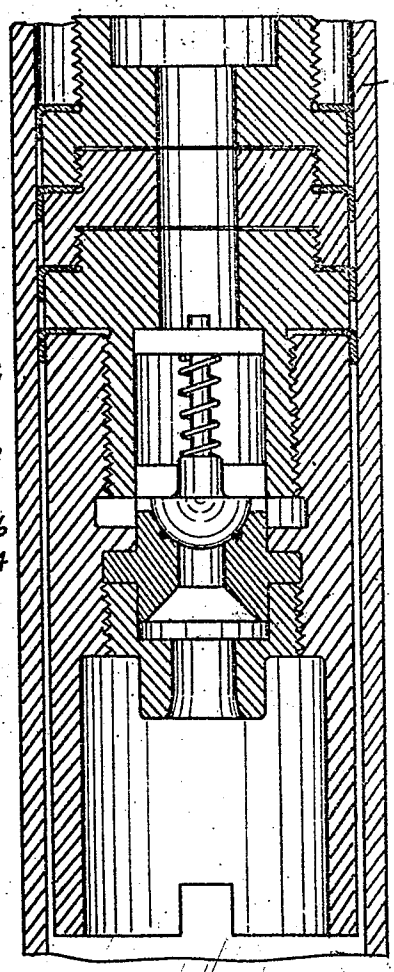


Fig. 2.

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UNITED STATES PATENT OFFICE.

GRANVILLE A. HUMASON, OF HOUSTON, TEXAS, ASSIGNOR TO TEXAS PUMP & SUPPLY COMPANY, OF HOUSTON, TEXAS, A CORPORATION OF TEXAS.

PUMP.

Application filed September 23, 1921. Serial No. 502,721.

To all whom it may concern:

Be it known that I, GRANVILLE A. HUMASON, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in a Pump, of which the following is a specification.

This invention relates to new and useful improvements in a pump.

One object of the invention is to provide a pump of the character described specially designed for the use in deep wells, such as oil wells, and has more particular relation to a novel construction whereby air, steam or similar fluids under pressure, may be utilized to assist in lifting the fluid, to be pumped, from the well.

Another object resides in the provision of a pump which is so constructed that said pressure fluid may be introduced into the working barrel for cleansing the same by removing the sand and other clogging matter which may collect therein.

With the above and other objects in view the invention has particular relation to certain novel features of construction, operation and arrangement of parts an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figures 1 and 2 show vertical sectional views, respectively, of the top and bottom of the plunger.

Referring now more particularly to the drawings, the numeral 42 designates a valve casing which is connected to the sucker rod 32 by means of a coupling 43 which abuts against the upper end of the casing and contains the back pressure valve mechanism 44. A liner 45 extends up through the reduced upper end of said casing and is threaded into the coupling 43. This liner has an annular shoulder 46 which abuts against an opposing annular shoulder 47 in the upper end of the casing and forms with a tight joint.

The lower end of this liner has an enlarged head 48 onto which the respective sections of the casing 42 are. This head separates said casing into upper and lower chambers 49 and 50. The head has the vertical passageways 51 connecting said chambers and the upper chamber walls have the outlet ports 52 therethrough. The casing has suitable inlet valves to control the inflow of fluid through the plunger.

The liner 45 has a fluid passageway 53 extending from its upper end down into the head 48 and which separates into upwardly inclined ducts 54, which lead through the head and terminate in the annular groove 55 around said head beneath the ports 52. The adjacent ends of the sections of the casing 42 are spaced apart, forming an annular space which coincides with said groove. The ducts 54 are staggered with relation to the passageways 51, through the head.

The valve casing 42 is enlarged beneath the groove 55 and formed with an annular cutting edge 56 which cleanses the inner wall of the working barrel and prevents sand and other foreign matter from working in between said plunger and barrel.

Air, steam and other fluid may be forced, under pressure, down through the sucker rod 32 past the valve 44 and on down through the liner and out through the ducts 54 and the groove 55 in a ring-like sheet and will pass up around the sucker rod to the surface of the ground, carrying the oil, or other fluid, being pumped, out of the well thus materially assisting the pumping operation.

What I claim is:—

The combination with a working barrel of a plunger therein, said plunger including a valve casing whose upper end is reduced, a liner extending up through the reduced upper end of said casing and forming a tight joint therewith, an enlarged head on the lower end of said liner threaded into said casing and separating the casing into upper and lower chambers, said head being provided with vertical passageways connecting said chambers, and the upper chamber walls having outlet ports, valves controlling the flow of fluid upwardly through said casing, said liner having a fluid passageway extending from its upper end down into said head, said passageway separating into upwardly inclined ducts which lead through

the head, said casing having an annular space into which the ducts terminate, an annular cutting edge carried by said casing beneath said space, a tubular sucker rod connected to the upper end of said plunger and a downwardly opening valve in said sucker rod.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GRANVILLE A. HUMASON.

Witnesses:

E. V. HARDWAY,

J. A. CARPENTER.